

Appl. No. 10/709,278
Amdt. dated December 28, 2005
Reply to Office action of September 29, 2005

Amendments to the Specification:

Please substitute Paragraph [0011] with the following amended text:

According to the claimed invention, a semiconductor substrate with a low-k dielectric layer $(k \leq 2.9)$ thereon and a SiC layer over the low-k dielectric layer is provided. A blocking layer is formed on the SiC layer, where the blocking layer is used to prevent unpolymerized precursors diffused out from the low-k dielectric layer from contacting an overlying resist. A BARC layer is formed on the blocking layer. A resist layer having an opening to expose a portion of the BARC layer is formed on the BARC layer. A damascene structure is formed in the low-k dielectric layer by etching through the BARC layer, the blocking layer, the SiC layer, and a portion of the low-k dielectric layer through the opening.

Please substitute Paragraph [0018] with the following amended text:

The above low-k dielectric layer 12 comprises a carbon-doped oxide (CDO) substance. The thickness of the SiC layer 14 is less than 700 angstroms. The Ar plasma comprises a ~~flurane~~ fluorine substance. The ~~flurane~~ fluorine substance could be CF_4 . However, the present invention is not limited in this way.

Please substitute Paragraph [0020] with the following amended text:

In the third-stage, as shown in Fig. 12, a single damascene structure is formed in the low-k dielectric layer 12 by etching through the BARC layer

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16, the blocking layer 15, the SiC layer 14, and a portion of the low-k dielectric layer 12. Then, a metal layer (not shown) is deposited over the low-k dielectric layer 12. A CMP process removes the metal residues on the low-k dielectric layer 12.

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Please substitute Paragraph [0022] with the following amended text:

The above low-k dielectric layer 22 comprises a CDO substance. The thickness of the SiC layer 24 is less than 700 angstroms. The Ar plasma comprises a ~~fluorane~~ fluorine substance. The ~~fluorane~~ fluorine substance
10 could be CF₄. However, the present invention is not limited in this way.

Please substitute Paragraph [0023] with the following amended text:

A second BARC layer 36 is formed on the blocking layer 35 and the metal layer 26, the second BARC layer 36 filling the trench structure 34. A
15 second resist layer 40 having a via opening, called a via photo, to expose a portion of the second BARC layer 36 is formed on the second BARC layer 36. In the fifth-stage, as shown in Fig.14, the via opening 38 is utilized to etch through the second BARC layer 36, the blocking layer 35, the SiC layer 24, and a portion of the low-k dielectric layer 22 to form a via
20 structure 42.

Please substitute Paragraph [0024] with the following amended text:

In the sixth-stage, as shown in Fig.15, the second resist layer 40 and

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the second BARC layer 36 are removed. In the seventh-stage, as shown in Fig.16, a dual damascene structure having the trench and the via structure is formed in the low-k dielectric layer 22 by using the metal layer 26 and the SiC layer 24 as masks. A metal layer is deposited (not shown). A CMP
5 process removes the metal residues on the low-k dielectric layer 22.